

Claims Written in Clean Form

All pending claims in this application are rewritten below in clean form pursuant to Rule 1.121 (c)(1)(i).

- A1
1. (Amended) A method of forming a trench in a semiconductor device, comprising:
 - disposing a masking material on the semiconductor device;
 - forming a protruding portion at a location of the trench by forming an opening in the masking material adjacent to the location of the trench;
 - depositing a semiconductor material to fill in the opening;
 - removing the protruding portion to form the trench; and
 - etching the semiconductor material to round off corners of the trench.
 2. (Amended) The method of claim 1, further including:
 - providing a substrate supporting the masking material;
 - and
 - forming a first epi layer between the substrate and the masking material.
 3. The method of claim 1, wherein the semiconductor material is an epitaxial material.
 4. The method of claim 1, further including the step of forming a mask at the location of the trench after disposing the masking material.
 5. The method of claim 4, wherein forming the protruding portion further includes performing an etch step to remove the masking material where the mask is absent to form the opening.

6. The method of claim 1, wherein depositing the semiconductor material includes using a selective epi growth process to fill in the opening.

7. The method of claim 1, wherein depositing the semiconductor material includes using a blanket epi growth process to deposit the semiconductor material over the protruding portion and in the opening.

8. The method of claim 1, wherein removing the protruding portion step is a non-damaging mask removal step.

9. (Amended) A method of forming a trench in a semiconductor device, comprising:

providing a substrate for the semiconductor device;

forming a first epi layer above the substrate and having a major surface;

forming a protruding region on the first epi layer having an opening adjacent to the protruding region and exposing the major surface of the first epi layer;

forming a second epi layer within the opening adjacent to the protruding region;

removing the protruding region to form the trench within the second epi layer aligned with the major surface of the first epi layer of the semiconductor device; and

etching the second epi layer to round off corners of the trench.

10. The method of claim 9, further including before forming the protruding region, forming a masking material above the first epi layer.

11. The method of claim 10, further including forming a mask on the masking material at a location for the trench;

12. The method of claim 11, wherein the mask is a photoresist material.

13. The method of claim 11, wherein forming the protruding region further includes performing an etch step to remove the masking material where the mask is absent to form the opening.

14. The method of claim 9, wherein forming the second epi layer includes using a selective epi growth process.

15. The method of claim 9, wherein forming the second epi layer further includes forming the second epi layer over the protruding region.

16. The method of claim 15, wherein forming the second epi layer over the protruding region includes using a blanket epi growth process.

17. (Amended) A method of forming a trench in a semiconductor device, comprising;
disposing a first material on the semiconductor device;
forming first and second openings in the first material to form a protruding region;
disposing a second material in the first and second openings;
removing the protruding region to form the trench; and
etching the second material to round off corners of the trench.

18. The method of claim 17, further including:
forming a substrate below the first material; and
forming an epi layer between the substrate and the first material.
19. The method of claim 17, wherein the first material is a masking material from a group consisting of silicon dioxide and silicon nitride.
20. The method of claim 17, wherein the second material is an epitaxial material comprised of silicon.
21. The method of claim 17, further including forming a mask on the first material after disposing the first material.
22. The method of claim 21, wherein forming the first and second openings includes performing an etch step to remove the first material adjacent to the mask.
23. The method of claim 17, wherein disposing the second material includes using a selective epi growth process.
24. The method of claim 17, wherein disposing the second material further includes disposing the second material over the protruding region.
25. (Amended) The method of claim 24, wherein disposing the second material over the protruding region includes using a blanket epi growth process.
-